

# CALIPSO Mission Report

Chip Trepte

NASA Langley Research Center

Pascale Ferrage

CNES Toulouse Space Center

CALIPSO-CloudSat Status Report  
March 1, 2022





# >15 Years on Orbit (and Counting)

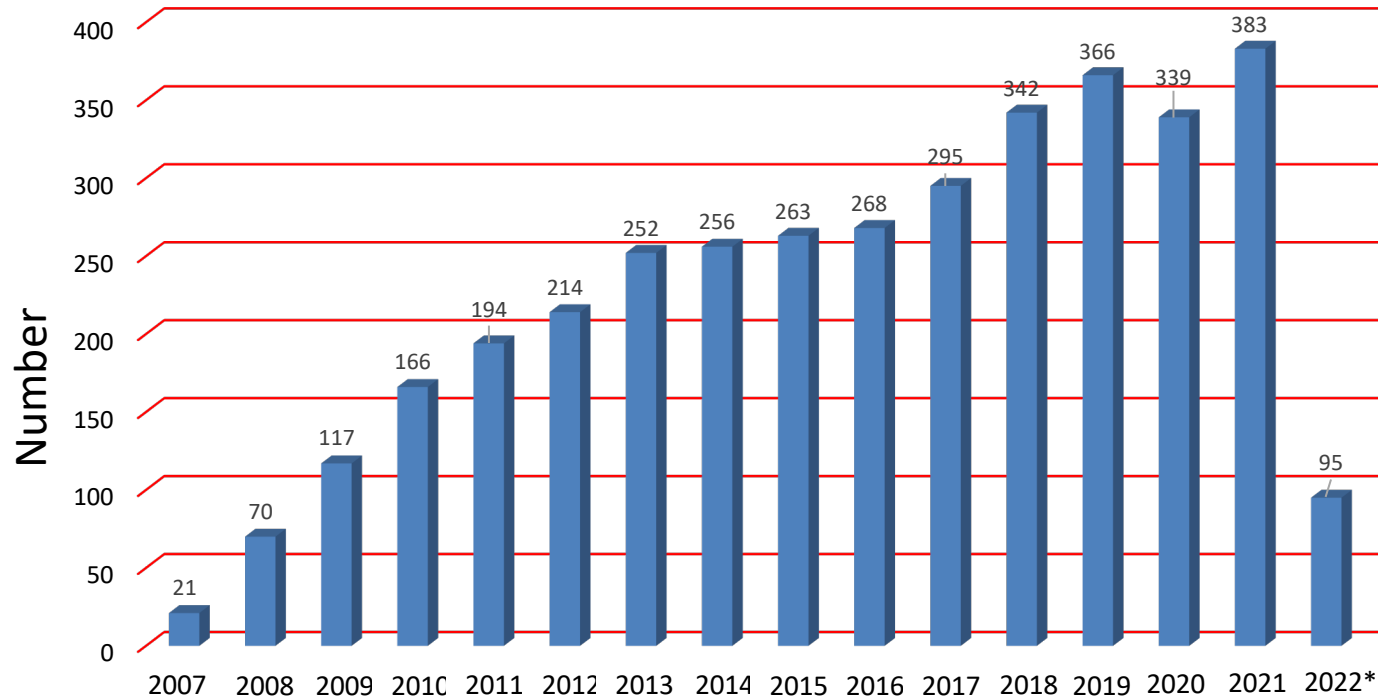
- **CALIPSO is in its Golden Years**
- Payload and spacecraft have performed well beyond expectations
- Mission has been successful beyond 'our wildest imagination'
- Combined CALIPSO-CloudSat measurements are transformative in advancing knowledge on clouds and aerosols and their roles in climate, weather and air quality
- C-C moved out of A-Train in Sep 2018
- Looking forward to resuming coordinated CALIPSO-CloudSat observations



*CALIPSO Extended Mission Proposal submitted to NASA on February 29, 2020. Image of combined CALIPSO-CloudSat profile observations for January 16, 2020.*



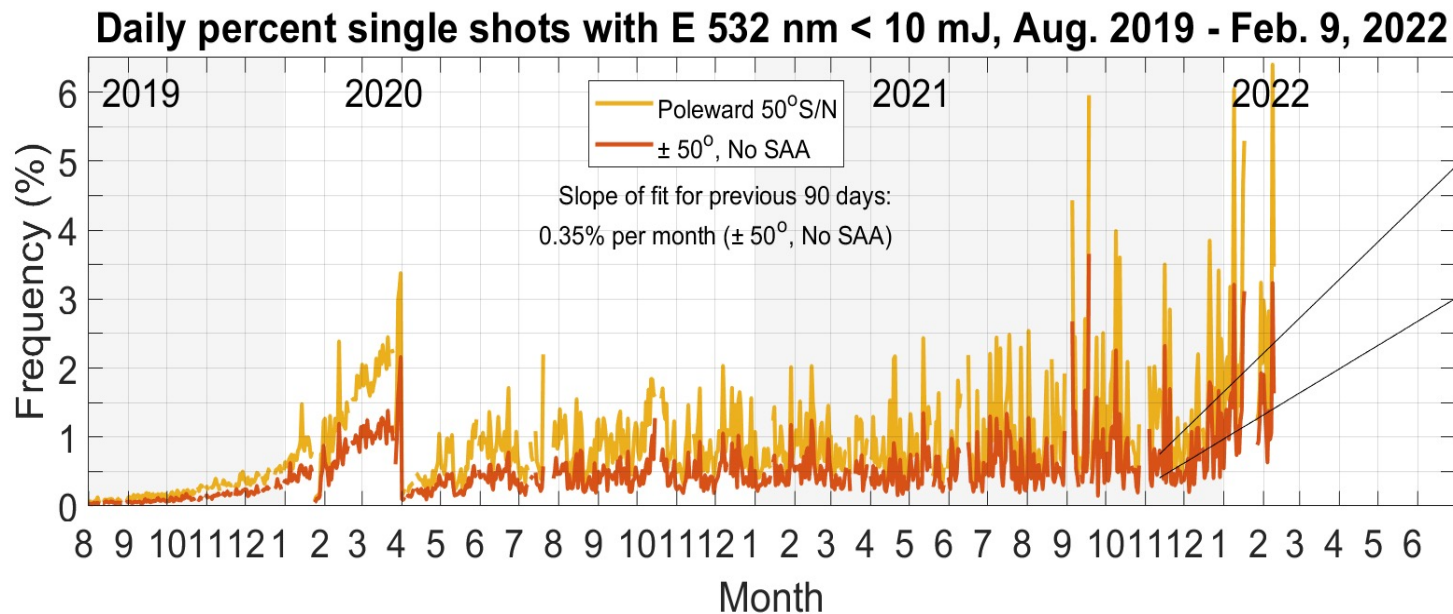
# Publications Citing CALIPSO Data



- 3641 total publications referencing CALIPSO data products
- Includes publications in 2022 papers in press



# Low Laser Energy Shot Trend

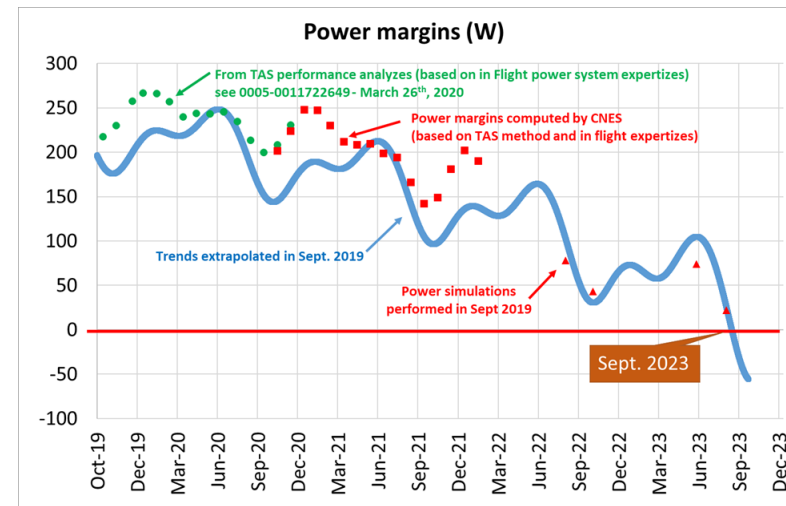


- Trend of increasing low energy shots observed in 2019 and early 2020 stopped suddenly on 01 April 2020; reason is unknown
- After the 'reset' occurred, the frequency of low energy shots has been erratic with no observable trend
- Increase spike frequency tied to increased solar activity, especially in 2022
- Presently no intent to switch to the original 'primary' laser





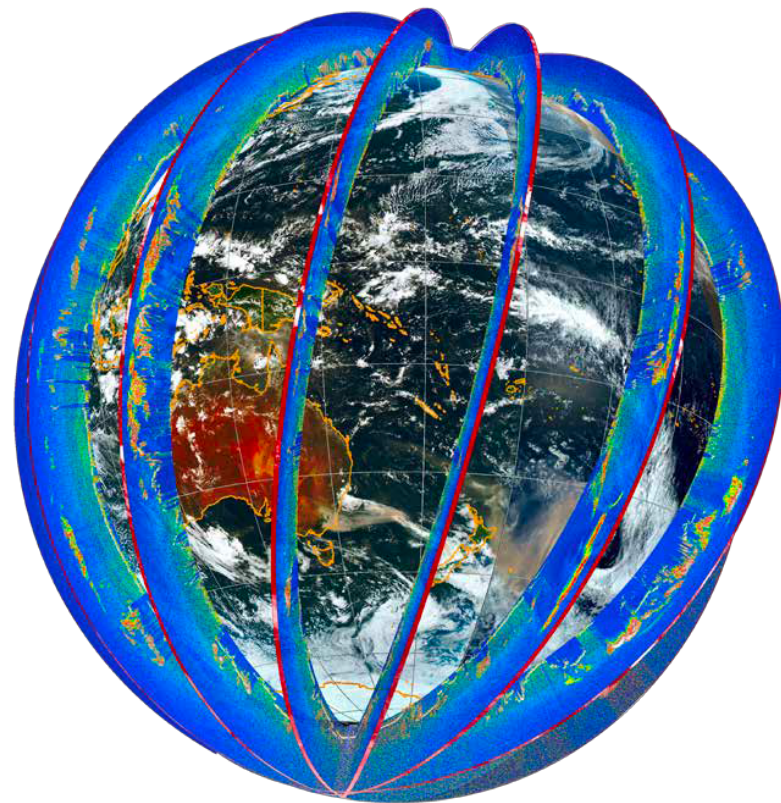
- 
- Mean Local Time**
- | Date    | Mean Local Time (HH:MM) |
|---------|-------------------------|
| 10/2019 | 13:47                   |
| 12/2019 | 13:50                   |
| 3/2020  | 13:55                   |
| 6/2020  | 14:00                   |
| 9/2020  | 14:05                   |
| 12/2020 | 14:10                   |
| 3/2021  | 14:15                   |
| 6/2021  | 14:20                   |
| 9/2021  | 14:25                   |
| 12/2021 | 14:30                   |
| 3/2022  | 14:35                   |
| 6/2022  | 14:40                   |
| 9/2022  | 14:49                   |
| 12/2022 | 14:55                   |
| 3/2023  | 15:00                   |
| 6/2023  | 15:05                   |
| 9/2023  | 15:10                   |
| 12/2023 | 15:13                   |





# Summary

- CALIPSO continues to provide valuable observations with CloudSat
  - healthy publication rate using these data
- The mission is approaching its end of life
  - No fuel available for maneuvers
  - Backup laser producing low energy shots with increasing frequency
  - IIR is working very well
  - Wide field camera stopped working in April 2020
- Mission expected to end September 2023 due to reduced power availability
- Expect a 2-year end-of-mission phase to prepare final algorithms and process full data record. Also – prepare final documentation



*CALIPSO is a partnership  
between NASA and CNES*